



The #3 greatest weather event across the North Country voted on by the NWS BTV staff during 2014 was the record cold March. Vermont had the coldest March on record with a temperature average of 8.9°F below normal, and nearly two thirds of the Great Lakes remained frozen until early April impacting commercial shipping. This record cold was caused by a deep trough in the jet stream winds across the Eastern United States, which resulted in numerous arctic outbreaks. This cross polar flow in the winds aloft produced a direct feed of very cold air from the Arctic Circle, which is highlighted in Figure 6 below. This highly amplified pattern featured a strong ridge of high pressure across the Western United States, with a deep downstream trough over the eastern two-thirds of the nation. Note the jet stream is a fast ribbon of air between 25,000 and 35,000 feet above the surface and divides warm air to the south and cold air to the north, and typical helps in the development and track of surface cyclones. The counter clockwise circulation around the quasi-stationary area of low pressure over the Hudson Bay region, helped to advect numerous blasts of arctic air across our region during March of 2014.

Jet Stream Position on 5 March 2014

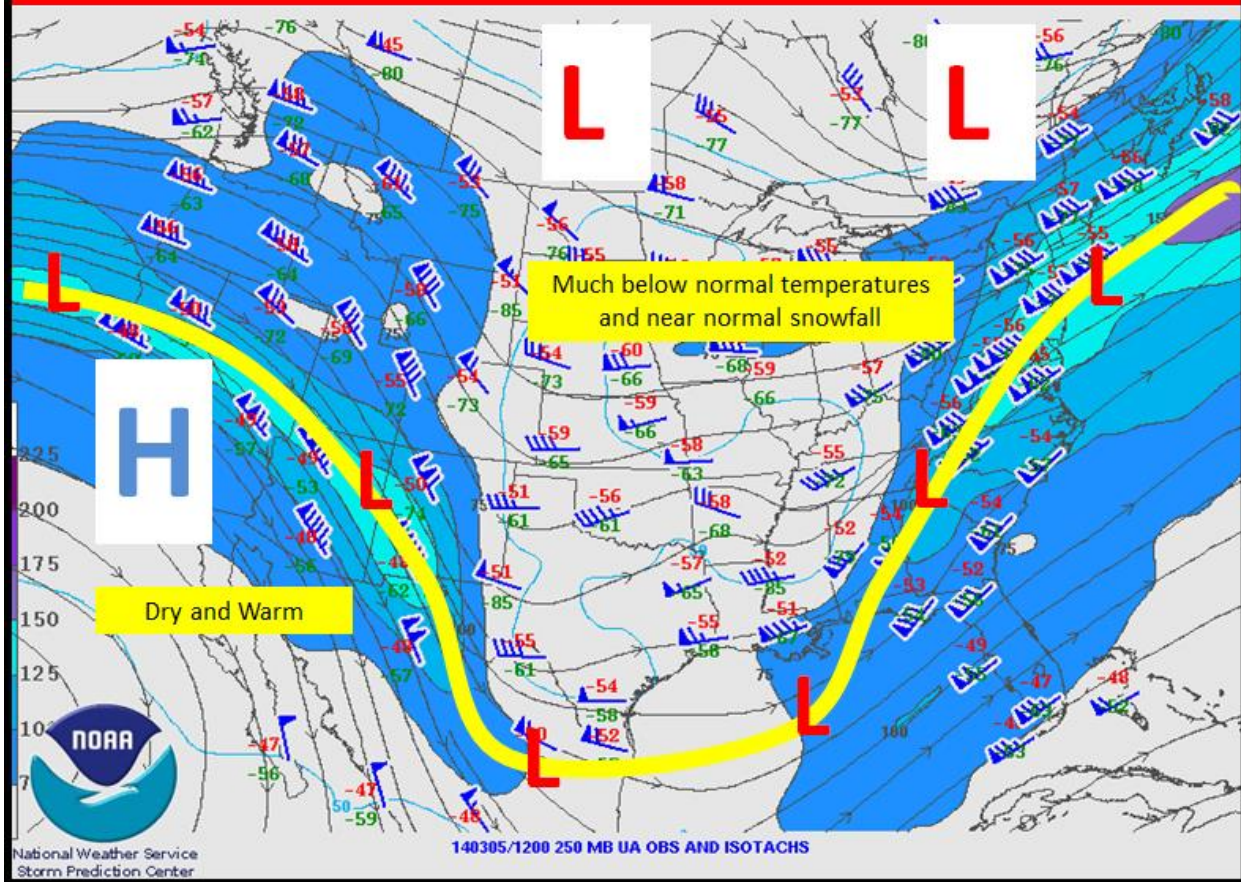


Figure 1: Jet stream position on 15 March 2014.

Figure 2 below shows the daily average temperature departures from March 1st through the March 31s across the entire United States. Noticed in the loop several extremely large departure below normal daily average temperatures (10 to 20°F below normal), highlighted by the darker blue color. These large temperature departures impacted most of the eastern two-thirds of the country, with above normal temperatures over the western United States.

Daily Average Temperature Departures March 1-31, 2014

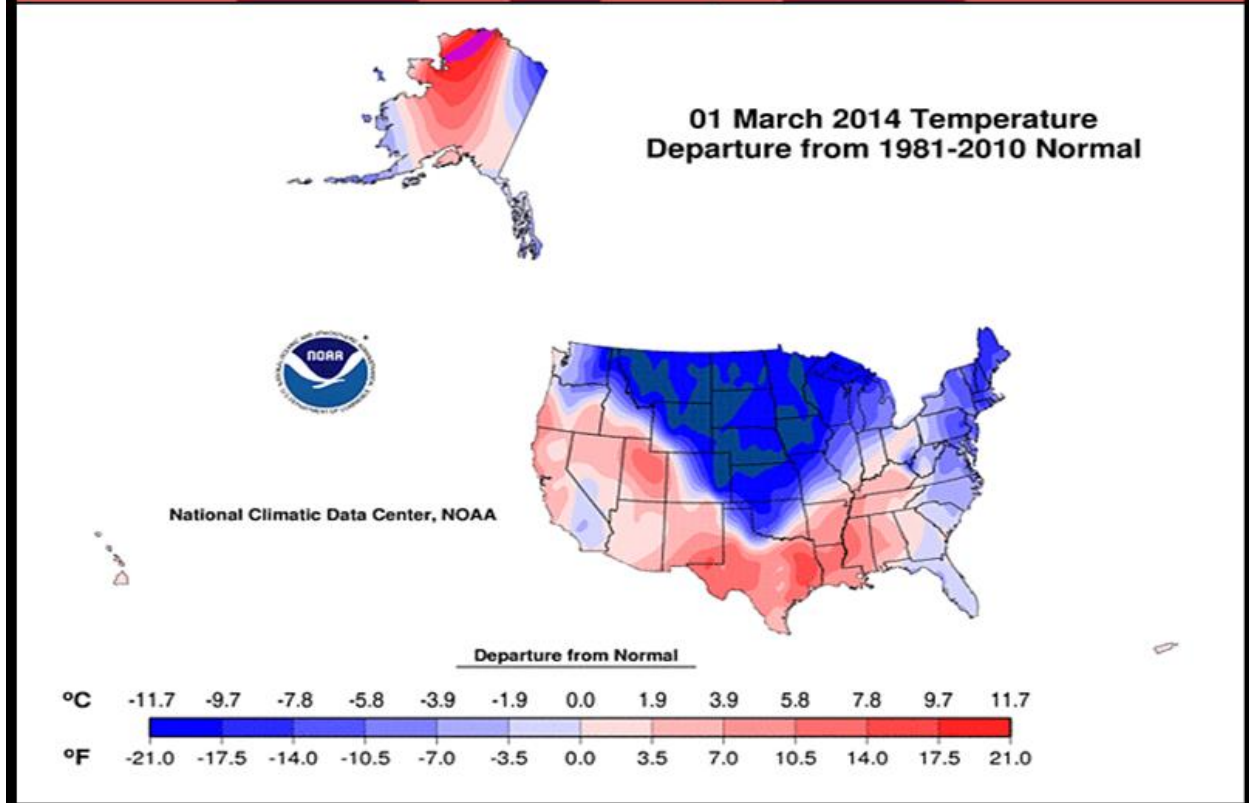


Figure 2: Daily Average Temperature Departures March 1st through March 31st, 2014. (Click image to animate)

Figure 3 shows the statewide temperature ranking for the month of March 2014. Note Vermont rank coldest on record for the 1895 to 2014 period with New Hampshire and Maine ranking #2.

Map of the United States showing temperature anomalies for April 4, 2014. The map is color-coded from dark blue (Record Coldest) to dark red (Record Warmest). Numerical values are provided for each state, representing the number of days with temperatures in that range. The legend at the bottom shows the color scale: Record Coldest (1), Much Below Average, Below Average, Near Average, Above Average, Much Above Average, and Record Warmest (120). The map shows a mix of temperatures, with some areas in the West and Northeast being much below average, and others in the South and West being much above average.

State	Temperature Anomaly Range	Number of Days
Alaska	Record Coldest (1)	1
Idaho	Much Below Average	88
Washington	Much Below Average	104
Oregon	Much Below Average	98
California	Much Above Average	112
Nevada	Much Below Average	103
Utah	Much Below Average	102
Arizona	Much Above Average	110
New Mexico	Much Below Average	95
Wyoming	Near Average	58
Montana	Near Average	50
North Dakota	Near Average	49
South Dakota	Near Average	53
Nebraska	Below Average	39
Kansas	Below Average	21
Oklahoma	Below Average	35
Minnesota	Much Below Average	8
Wisconsin	Much Below Average	5
Illinois	Below Average	13
Indiana	Below Average	13
Michigan	Much Below Average	5
Ohio	Below Average	15
Pennsylvania	Much Below Average	10
New York	Much Below Average	15
Connecticut	Much Below Average	15
Massachusetts	Much Below Average	15
Rhode Island	Much Below Average	13
Delaware	Much Below Average	23
Maryland	Much Below Average	15
Virginia	Below Average	19
North Carolina	Below Average	15
South Carolina	Below Average	13
Georgia	Below Average	16
Florida	Below Average	47
Alabama	Below Average	21
Mississippi	Below Average	15
Louisiana	Below Average	14
Arkansas	Below Average	25
Texas	Below Average	27
Oklahoma	Below Average	28
Missouri	Below Average	21
Iowa	Below Average	25
Illinois	Below Average	27
Indiana	Below Average	27
Ohio	Below Average	27
Pennsylvania	Below Average	27
New York	Below Average	27
Connecticut	Below Average	27
Massachusetts	Below Average	27
Rhode Island	Below Average	27
Delaware	Below Average	27
Maryland	Below Average	27
Virginia	Below Average	27
North Carolina	Below Average	27
South Carolina	Below Average	27
Georgia	Below Average	27
Florida	Below Average	27
Alabama	Below Average	27
Mississippi	Below Average	27
Louisiana	Below Average	27
Arkansas	Below Average	27
Texas	Below Average	27
Oklahoma	Below Average	27
Missouri	Below Average	27
Iowa	Below Average	27
Illinois	Below Average	27
Indiana	Below Average	27
Ohio	Below Average	27
Pennsylvania	Below Average	27
New York	Below Average	27
Connecticut	Below Average	27
Massachusetts	Below Average	27
Rhode Island	Below Average	27
Delaware	Below Average	27
Maryland	Below Average	27
Virginia	Below Average	27
North Carolina	Below Average	27
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Georgia	Below Average	27
Florida	Below Average	27
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Virginia	Below Average	27
North Carolina		

Looking at individual sites across the North Country showed Burlington, VT had the 4th coldest March on record, with an average temperature of 22.1°F, which was -8.9°F below normal. Compare this to the average 2012 March temperature of 43.2°F, which was the warmest ever on record, shows the extreme between the two months. This is highlighted in figure 4 below.

March 2012 vs. March 2014

Burlington (Normal: 31.0°)

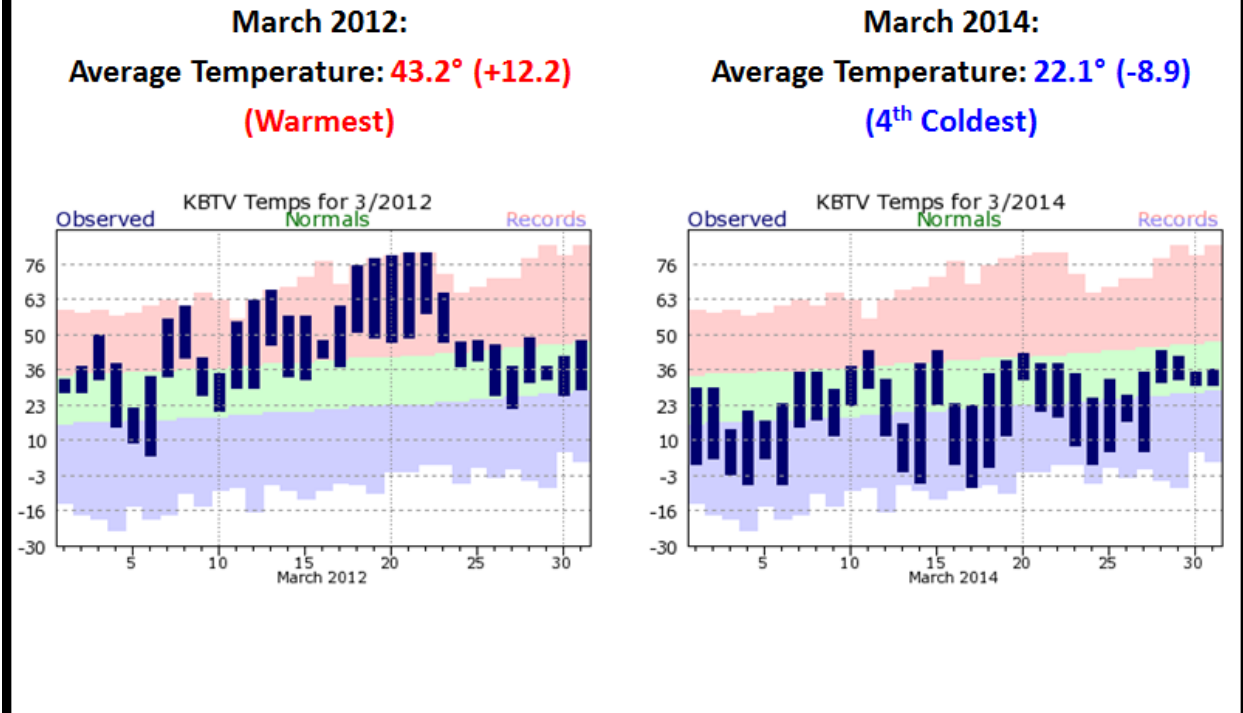


Figure 4: Burlington, VT March 2012 vs. March 2014 daily temperatures.

A similar temperature pattern was observed at Saint Johnsbury, VT with the 2012 average March temperature of 38.8°F or +8.5°F; while 2014 saw an average of 18.9°F or -11.4°F below on normal. Figure 5 shows the daily temperatures observed at Saint Johnsbury during March 2012 and 2014.

March 2012 vs. March 2014

St. Johnsbury (Normal: 30.3°)

March 2012:
Average Temperature: 38.8° (+8.5)

March 2014:
Average Temperature: 18.9° (-11.4)

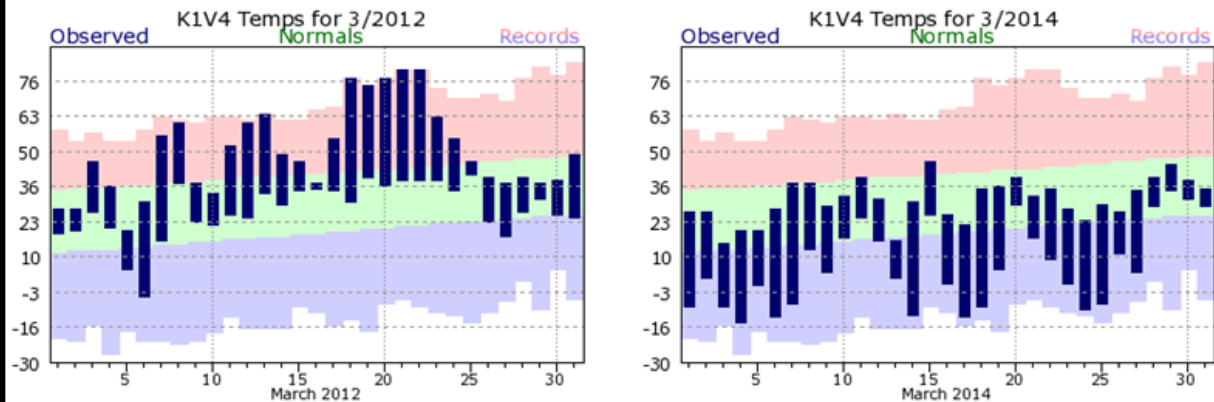


Figure 5: Saint Johnsbury, VT March 2012 vs. March 2014 daily temperatures.

Finally, a similar temperature profile was observed at Saranac Lake, but just colder per its high mountain valley location. From Figure 6, the average March 2014 temperature was 13.1°F or -11.4°F below normal. The warmest temperature observed was 42°F on March 28th, while the coldest was -29°F on March 17th. Saranac Lake experienced 18 days when the minimum temperature was 0°F or colder during the month of March 2014. March 2014 was an extremely cold month across our region and much of the nation, which will probably not occur again for many years.

Saranac Lake March 2014 Temperatures

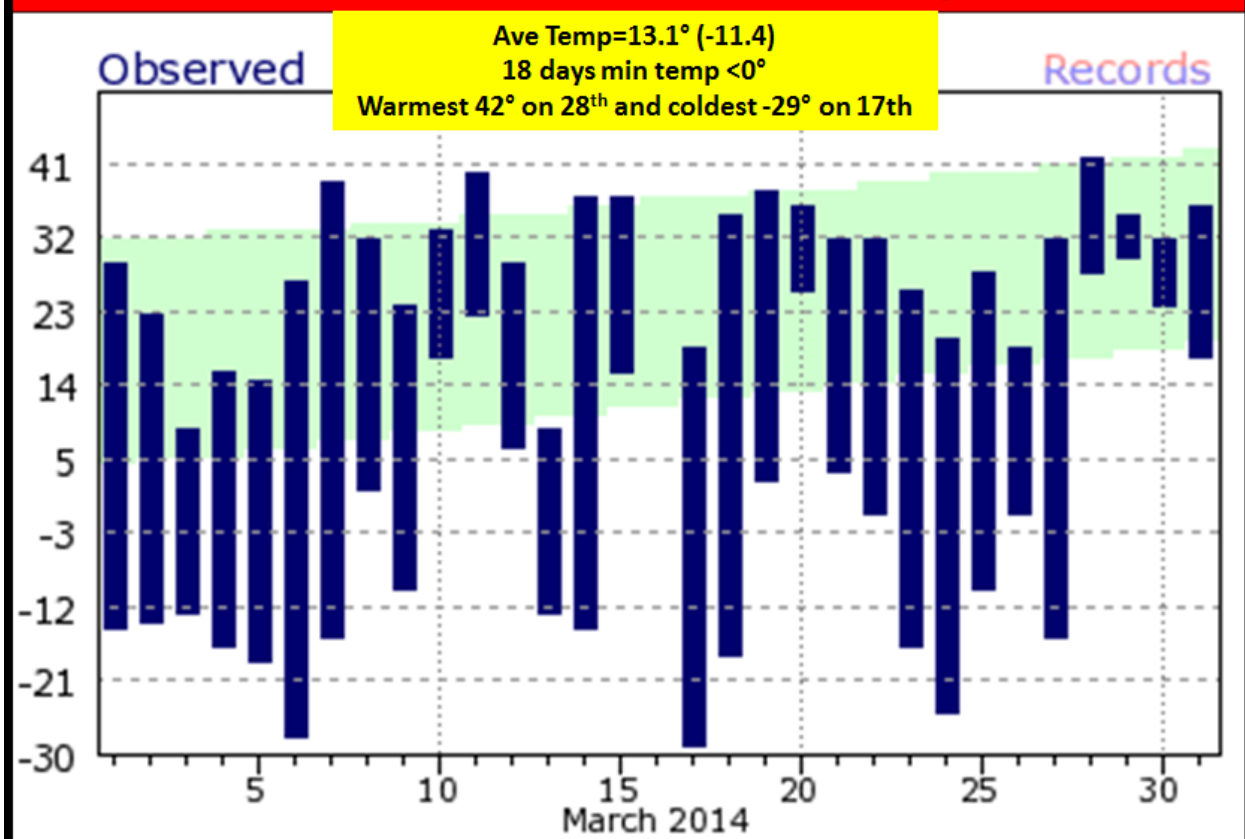


Figure 6: Saranac Lake, NY March 2014 daily temperatures.